IN THE SPECIFICATION

Please insert the following paragraph on page 1 after the title of the invention and before the "TECHNICAL FIELD":

--RELATED APPLICATION

This application is a national phase of PCT/JP2005/000339 filed on January 14, 2005, which claims priority from Japanese Application No. 2004-008917 filed on January 16, 2004, the disclosures of which Applications are incorporated by reference herein. The benefit of the filing and priority dates of the International and Japanese Applications is respectfully requested.--

The following paragraphs will replace all prior versions of them in the specification of the application.

1) Page 9, line 24 through page 10, lines 6 - 9, please make the following changes:

In order to solve the above-mentioned problems, a repetitive control device defined in Claim 1 of the present invention comprises an adder to which a compensated signal is inputted; and a feedback signal system for sequentially updating and storing an output signal from the adder as a compensation signal, and outputting the signal to the adder; and the feedback signal system comprises a filter which has, as a delay element, a memory which stores signal information for one rotation of a disc into divided plural memory areas of the memory, and a gain element which multiplies an output from the filter by a value not larger than 1, and inputs the resultant to the adder, and the filter is operated using a clock signal that is ~~an integral multiple of an operation frequency of a driving signal~~ equal to an operation frequency of a driving signal or a divided frequency thereof. Therefore, it is possible to ~~increase the gain~~ prevent aliasing noises by performing band restriction with the filter, and the compensation gain at a frequency equal to an integral multiple of the frequency for one rotation of the disk to a higher frequency band, without generating phase rotation of the compensation signal with respect to the above-mentioned compensated signal, thereby achieving ~~high~~ higher followability to fluctuations in the track position which are caused by the shape of a disc, such as decentering

and surface wobbling. Further, since a memory for a filter delay processing, which has conventionally been needed, is dispensed with, the circuit scale is reduced.

2) Page 11, line 1, please make the following change:

Further, according to Claim 3 of the present invention, in the repetitive control device defined in Claim 2, a word length of the higher-order bit data recorded in the memory is equal to a word length of data of the compensated signal that is added in the adder, or to a word length of a DA converter to which the output of the adder is inputted. Therefore, the circuit scale of the memory is reduced to the minimum, and further, the filter operation is stabilized, and the arithmetic precision is maintained.

3) Page 12, line 2-4, please make the following changes:

Further, a repetitive control device defined in Claim 6 of the present invention comprises an adder to which a servo error signal is inputted; an integral gain for multiplying an output from the adder by a predetermined value; and a feedback signal system for sequentially updating an output signal from the adder and inputting the signal to the adder; and the feedback signal system comprises a memory in which signal information for one rotation of a disc is divided to be stored in plural memory areas, and a gain element which multiplies an output from the memory by a value not larger than 1, and inputs the resultant to the adder, and when performing an integral operation to the inputted servo error signal, the integral operation uses the memory as a delay element for the input signal. Therefore, the gain at the frequency synchronized with the rpm of the disc in the servo error signal is made equal to the DC gain in the integral term without generating a phase delay, after realizing the removal of aliasing noises and the integration process simultaneously, whereby ~~the gain can be increased with smaller circuit scale, without generating a phase delay~~ a PID filter having a high low-pass gain can be realized without adversely affecting the servo characteristics.

4) Page 12, line 24 through page 13, line 8, please make the following changes:

A repetitive control device according to the present invention is provided with an adder to which a compensated signal is inputted, and a feedback signal system for sequentially updating

and storing an output signal from the adder and outputting the signal to the adder as a compensation signal, and a memory in which signal information for one rotation of a disc is divided to be stored in plural memory areas is used as a delay element of a filter constituting the feed back signal system, and further, filtering is carried out using a clock signal that is ~~an integral multiple of an operation frequency of a driving signal~~ equal to an operation frequency of a driving signal or a divided frequency thereof. Therefore, with respect to a frequency component that is synchronized with the rpm, a signal having no phase shift can be recorded into the memory and outputted while preventing aliasing noises by performing band restriction, thereby achieving high followability, up to a higher frequency band, to fluctuations in the track position that are caused by the shape of the disc such as decentering and surface wobbling.

5) Page 21, line 16, please make the following change:

As shown in figure 4, with respect to the servo characteristics, the ~~loop~~ compensation gain at a frequency that is an integral multiple of the frequency corresponding to one rotation of the disc can be increased as in the conventional device, whereby the followability of the pickup 5 to the fluctuations in the track position which are caused by the shape of the disc can be improved.

6) Page 22, line 7, please make the following change:

As described above, according to the repetitive control device 11 of the first embodiment, the memory 7 is used as a delay element for the filter 6, and the filtering process is carried out using a clock signal that is an integral multiple of the operation frequency of the driving signal. Therefore, the compensation gain can be increased without generating phase rotation of the compensated signal, thereby achieving high followability to fluctuations in the track position which are caused by the shape of the disc, such as decentering and surface wobbling.

7) Page 27, line 24, please make the following changes:

This integration is carried out with a frequency equal to the operation frequency of the driving signal or a division frequency thereof, whereby several tens to several hundreds of processes are repeatedly carried out to the same memory cell 7M until the memory address is

changed by the control signal from the memory controller 8 and thereby aliasing noises can be removed.

8) Page 28, line 6, please make the following change:

Thereby, the ~~driving~~ servo error signals corresponding to displacements of the respective positions on the disc can be stored and outputted over a broad bandwidth, and further, a phase delay in the integration process is resolved to improve the loop phase characteristics.

9) Page 28, line 20-24, please make the following change:

Figure 7(a) is a diagram illustrating the gain characteristics and the phase characteristics obtained in the conventional integral term operation part, and figure 7(b) is a diagram illustrating the gain characteristics and the phase characteristics obtained in the integral term operation part according to the third embodiment. In the figures, ~~solid lines (1) indicate the gain and phase characteristics in the case where the low-pass gain of the input signal is increased, and dotted lines (2) indicate the gain and phase characteristics of the input signal~~ dotted lines (2) indicate the gain and phase characteristics of the servo filter after modification, and solid lines (1) indicate the gain and phase characteristics in the case where the gain of the integral term is increased.

10) Page 29, line 2, please make the following change:

As shown in figure 7(a), during the integration performed by the conventional integral term operation part, a phase delay occurs when the ~~low-pass~~ gain of the integral term is increased, thereby adversely affecting the followability to the track.

11) Page 29, line 16-17 please make the following changes:

As described above, in the repetitive control device according to the third embodiment of the invention, the integral operation processing to be performed by the integral term operation part of the servo filter is performed using the memory in which signal information for one rotation of the disc is divided to be stored in plural memory areas. Therefore, the gain at the frequency synchronized with the rpm of the disc in the servo error signal can be made equal to

the DC gain of the integral term without generating a phase delay, whereby ~~the gain can be increased with a smaller circuit scale, without generating a phase delay~~ a PID filter having a high low-pass gain can be realized without adversely affecting the servo characteristics.